UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

61 Forsyth Street
Atlanta, Georgia 30303-3104

4WD

MEMORANDUM

SUBJECT: Escambia Wood Treating Company Superfund Site - Operable Unit 1
National Remedy Review Board Recommendations

FROM: Winston A. Smith, Director
Waste Management Division

TO: Jo Ann Griffith, Chair
National Remedy Review Board

Purpose

Region 4 has completed review of the National Remedy Review Board recommendations for the Escambia Wood Treating Company Superfund Site, Operable Unit 1, in Pensacola Florida, and offers the following responses to the Board recommendations. As a result of the Board review, Region 4 has revised the Feasibility Study and draft Proposed Plan to provide additional justification for the action, and has adjusted the recommended preferred alternative to optimize the use of the State's limited flexibility under Florida statute in the cleanup approach.

1. Based on the information presented to the Board, it is not clear that the Florida statute and implementing regulations are an ARAR for the soil contamination at this site.

On June 20, 2003, the Florida legislature passed a "risk based corrective action" (RBCA) statute, Section 376.30701, Florida Statutes (F.S.) that is designed to address environmental cleanups conducted at all contaminated sites in Florida not subject to the petroleum, brownfields, and drycleaning solvent programs described in Sections 376.3071, 376.81 and 376.3078, F.S, respectively. The FDEP also has adopted rules implementing these statutory RBCA cleanup requirements in Chapters 62-780 and 62-777, Florida Administrative Code (F.A.C.). The State of Florida through the General Counsel of the FDEP interprets this statute and its implementing rules to require that all RBCA cleanups attain cleanup target levels that achieve an excess lifetime cancer risk of 1 x 10^{-6} for carcinogens, or a hazard index of 1 or less for non-carcinogens, unless one of the statutory exceptions to achieving these cleanup target levels exists. (See attached FDEP June 5, 2005 letter). Region 4 believes that

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these risk requirements as interpreted by the State of Florida constitute ARARs for ground water, surface water, and soil contamination that must be met, or waived, for cleanups at CERCLA sites in Florida subject to RBCA.

2. If the Florida statute is an ARAR, the State representatives indicated at the meeting that there was limited flexibility (engineering controls, institutional controls) in the cleanup approach taken to meet the statute's 10^{-6} cleanup requirement. The Board was not presented with information that indicated whether the Region considered any approaches other than the two-foot excavation across the off-site (former residential) areas. The Board encourages the Region to consider developing other alternatives to excavating all of the material above the state's commercial cleanup level or to document their rationale as to why that approach was not possible.

The treatment alternatives did initially consider and evaluate treating off-site soils in place, but this was eliminated from further development because of the large/shallow area covered by the soils. Another approach that was considered involved simply covering the off-site soils in place. However, the cost associated with ensuring that exposure could be sufficiently controlled was greater than the cost of simply excavating and consolidating the soils on-site.

Following discussions with the Remedy Review Board, an approach involving covering a portion of the on-site surface soils in place by extending the upper layers of the cap has been evaluated. Each alternative now includes a "reduced excavation approach" option based on this approach. This option produces a cost savings over the "full excavation" approach for each of the remedial alternatives. It is expected that the Remedial Design will define the optimum balance between excavation and cover; however, this further refinement during design is not expected to materially affect the cost estimate for purposes of the Feasibility Study.

3. The previous EPA actions at the site included the relocation of a community of more than 350 residences. The Board acknowledges that the large number of residences relocated was a result of the site being selected for a relocation pilot by EPA Headquarters and not solely driven by human health risk issues. The package presented to the Board included a Baseline Human Health Risk Assessment (BHHRA) that indicates the human health risks from most of the off-site properties (Clarinda Triangle) being proposed for relocation are already acceptable (e.g. within EPA's cancer risk range of 10^{-4} and 10^{-6} and EPA's dioxin cleanup policy of 1.0 ppb. These few exceedances appear to be the basis for justifying a remedy that may not be necessary solely to protect human health. The Board recommends the Region consider limiting the scope of the action to the areas that present unacceptable risks or demonstrate that there is a clear basis for taking an action on properties that are within the acceptable risk range.

The BHHRA used for the Remedy Review Board package was based solely on data collected during the Remedial Investigation of site soils after the removal action. As discussed at the Remedy Review Board briefing, the removal action resulted in the stockpiling of approximately 255,000 cubic yards of the most contaminated soil in an on-site containment.

Since the stockpile represents a temporary remedy and since the stockpiled soil will be addressed by the soil remedy, the risks posed by this material should be included in the basis for action for the Soil operable unit. Accordingly, a technical memorandum has been developed as a supplement to the BHHRA based on soil data collected prior to and during the removal action. In summary, this risk assessment identified unacceptable risks for future use under residential, industrial, and visitor scenarios. The total incremental lifetime cancer risk estimates for the site worker and site resident are 4×10^{-2} and 3×10^{-1}, respectively. Non-cancer effects for the site resident produced a hazard index of 18, and were below 1 for the site worker. While dioxin is a significant contributor to these risks, the total incremental lifetime cancer risk estimates for a the site worker and site resident are 1×10^{-3} and 8×10^{-3}, respectively, for the soil if the dioxin data is excluded.

The recommended preferred alternative presented in the Remedy Review Board briefing is predicated on the applicability of Florida Statute §376.30701 due to the presence of unacceptable risk at the site. On this basis, contaminated soils on-site and off-site attributable to past operations and disposal practices will be addressed by this action. The off-site Clarinda Triangle area is being addressed for this reason, and residential relocation, either temporary or permanent, is therefore a necessary element of the cleanup. Each alternative includes an "Option B" which incorporates cleanup of Clarinda Triangle to residential standards using temporary relocation of the residents until remediation is completed. For the recommended preferred alternative, Option B may present the opportunity for a relatively small savings over the cost of Option A - permanent relocation of residents with cleanup to industrial standards; however for the other alternatives Option B appears to be more expensive.

4. The cost estimates submitted to the Board were incomplete with regard to some of the key elements of the preferred remedy. For example, the package states that a clay layer will be part of the cap and institutional controls will be implemented, but the estimate did not include any costs for these activities. The costs included for operation and maintenance of the cap appear to be low and the basis for the cost of backfilling the excavated areas with clean soil is not stated. Also, there is a 5% allowance for permits, which are not required at CERCLA cleanups. The Board recommends the Region addresses these cost issues when developing the decision documents.

The cost of a clay layer is now included for the preferred remedy. In addition, the 5% allowance for permits has been eliminated for each of the alternatives, and the spreadsheets have been revised to correct formula links, etc and improve consistency from alternative to alternative. These changes have been incorporated into the final Feasibility Study which was issued on June 15, 2005.

5. The Board notes that there was discussion during the Region's presentation that there may be opportunity for potential flexibilities in the design of the remedy. In the decision documents, the basis for estimated costs should be more comprehensive and the potential design flexibilities should be described. In particular, the Board recommends that the capping performance requirements (e.g., to prevent direct contact threat, to reduce permeability) be made clear in the decision documents. This will allow the designers to

consider alternative type covers that might lower the overall capping costs.

Region 4 anticipates that optimization of the selected cleanup approach will take place during the Remedial Design. The Remedial Investigation and supplemental studies form an adequate basis for the Feasibility Study and subsequent decision document, and the resulting cost estimates are considered to be well within the +50%/-30% accuracy for a Feasibility Study. In addition, an alternate cost estimate has been developed for each alternative based on a reduced excavation approach. This alternate approach reduces the total volume of soil to be excavated by leaving contaminated surface soil in place in certain areas of the site and preventing exposure to them by expanding the soil cushion/top soil/vegetative cover layers of the cap over them. The decision document for this action will clarify the cost basis, design objectives, and areas of design flexibility for the selected remedy to ensure an efficient design and action.

6. Off-site risks appear to be driven by dioxin and benzo(A)pyrene equivalents (cPAHs), and not by other site-specific compounds such as napthalene, fluoroethene, PCP, and others. Since these off-site drivers often occur in urban industrial areas, though anthropogenic, it was unclear to the Board as to whether they were site-related. Clearer documentation of the link to the site (attribution) should be provided in the decision documents.

Although dioxin and PAHs do often occur in urban industrial areas, the presence of these compounds in Clarinda Triangle can be attributed to the ETC site because their distribution is different than the pattern seen in most of the background soil samples that were collected. Specifically, nearly 50% of the sample locations in Clarinda Triangle included both dioxin and BaP exceedances of residential cleanup levels. This is similar to the site itself, where approximately 50% of the surface sample locations included exceedances of residential levels for both dioxin and BaP. This is a different pattern than is seen in the background samples. Of the 10 background samples, two included an exceedance only of the dioxin level and a third (different) location included only an exceedance of the BaP level. In addition, several of the groundwater protection COCs detected on-site, including acenapthene, fluorene and carbazole were detected at significant levels in the Clarinda Triangle sample location nearest the site, and phenanthracene was detected in samples collected from several of the Clarinda Triangle locations.

It should be noted that one of the major site COCs, pentachlorophenol (PCP) is not found in the Clarinda Triangle soils. However it is possible that it is present at concentrations below anayltical detection levels. As indicated above, dioxin/furan was detected in both source soils (on-site soils) and Clarinda Triangle soils. At wood treating sites, dioxins/furans are present as contaminants in the PCP used for wood preserving. Therefore the presence of dioxins/furans in the Clarinda Triangle soils may indicate that the Escambia Wood Treating Company is the source of contamination. This possibility was examined further through the use of congener profiles.

Anthropogenic sources of dioxins/furans can be distinguished from each other by the different mixtures of chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzofurans

(CDFs) that make up the material. The distribution of the 17 commonly analyzed congeners is referred to as the congener profile. A congener profile can be drawn by calculating the percentage of the total CDD/CDF concentration contributed by each congener, and drawing a bar chart to graphically display the information. Cleverly et al. (1997) determined the profiles for several combustion/incineration sources and chemical/manufacturing/processing sources.

The congener profile for technical grade PCP is dominated by OCDD (approximately 70 percent of the total CDD/CDF concentration). Relatively smaller amounts of 1,2,3,4,6,7,8,9-OCDF, 1,2,3,4,6,7,8-HpCDD and 1,2,3,4,6,7,8-HpCDF, as well as a trace amount of 1,2,3,4,7,8,9-HpCDF are also present. All other congeners are essentially absent from the mixture. Cleverly et al. note that: "There are similarities in the congener profiles of pentachlorophenol (PCP), diesel truck emmissions, unleaded gasoline vehicle emissions, and industrial wood combustors. In these sources OCDD dominates total emmission, but the relative ratio of 1,2,3,4,6,7,8-HpCDD to OCDD is also quite similar." This is important for the off-site attribution discussion as diesel emmissions and gasoline combustion could be contributors to the dioxin/furan found in the Clarinda Triangle. However, in the profiles shown in Cleverly et al., minor amounts of nearly all other congeners are also present in the diesel/gasoline combustion profiles, and OCDD appears to contribute only between 25 and 40 percent of the OCDD.

After drawing congener profiles from data from individual representative samples of the stockpiled soil and the 2004 soil samples from the Clarinda Triangle, it was observed that OCDD is not only dominant, but contributes between 70 and 83 percent of the CDD/CDF concentration on both sets of profiles. The source area profiles show close correlation to the PCP profile of Cleverly et al. However, one of the four samples contains minor amounts of 1,2,3,4,7,8-HxCDD. In addition, there is no trace amount of 1,2,3,4,7,8,9-HpCDF. The Clarinda Triangle profiles also all resemble the PCP profile. Three of the four that were drawn don't have the trace 1,2,3,4,7,8,9-HpCDF, but the fourth does. The data indicate that minor amounts of other congeners are present in both the on-site and off-site data, but, due to the large amount of OCDD, the percentage of these other congeners is too low to appear on the plots. These profiles, particularly the large contribution of OCDD to the total CDD/CDF concentrations in both sets of samples, suggest that the Escambia Wood Treating Company is the source for CDD/CDFs found in the Clarinda Triangle neighborhood.

7. The BHHRA, prepared in 1998, and presented to the Board evaluated risks primarily for current and future residential use. However, the reasonable anticipated future use, as presented in the Palafox Commerce Park Master Plan, considers the site to be a commercial, light industrial, and/or commerce center. The human health risks calculated for the reasonable anticipated future use scenario were not clearly presented to the Board and should be clarified in the decision documents. If the only land use considered in the risk assessment was residential, the board suggests the Region amend the BHHRA or explain why it still supports the need for action.

The BHHRA used for the Remedy Review Board package was based solely on data collected during the Remedial Investigation of site soils after the removal action and prior to the supplemental investigations. At that time, future residential land use for the off-site areas

was the appropriate scenario. Based on input from the Remedy Review Board and the change in anticipated future land use, a technical memorandum has been developed as a supplement to the BHHRA based on soil data collected prior to and during the removal action. This technical memorandum establishes the basis for action for the Soil operable unit, and provides evaluation for the reasonable anticipated future use (industrial scenario). The results of the supplemental BHHRA are summarized in the response to Board comment 3.

8. Because contaminated ground water is being addressed in a separate operable unit, the materials provided to the Board didn't demonstrate that the proposed soil remedy is consistent with the range of remedies being considered for ground water in the future. The Board recommends that the decision documents more clearly explain how the soil remedy components are necessary for and compatible with future ground water remediation. Some questions that were raised by separating the soil and ground water components of the remedy include:

   - Does the residual contaminated soil continue to act as a significant source of contamination to ground water or have the majority of the mobile contaminants already been released to the ground water? Was an appropriate model (not a screening level approach) or other tool used to document the assessment?

The high Kd values associated with the contaminants of concern make it unlikely that they have "flushed" through the system or that the contaminants could be considered highly mobile. Instead, these values suggest that the contaminated soil will be a continuing source of contamination for decades. The assessment of contaminated soil impact on groundwater was completed using the Summers model, which, while conservative, was based on site specific parameters.

   - Has a full investigation documented that DNAPL was sufficiently captured in the initial removal action and that there is not an additional source? Board members' experience at wood treating sites indicates that DNAPL is almost always found in the saturated and vadose zones resulting from long-term creosote treatment.

A review of the results from a 1991 preliminary assessment field investigation conducted prior to the removal action and a 1992 investigation conducted during the completion of the removal action suggest that the removal action had correctly targeted excavation areas and that the excavation work had succeeded in removing the bulk of contaminated soil. A brief review of the boring logs from the 1992 report did not suggest the present of DNAPLs during collection of subsurface soil samples. No observations of DNAPLs were made during the collection of soil samples collected as part of the 1998 RI, or from soil observations made during the installation of various monitor wells during the 1998 RI and the OU2 RI. A review of the ground water data collected within or near to the source areas did not indicate that the presence of a DNAPL source to ground water was likely.

   - Has consideration been given to disposal of soils possibly saturated with DNAPL and the effects it might have on liner compatibility and life?

Specifications for liner requirements will be developed in the design phase that address durability and compatibility with contaminants present in the stockpile and soil to be excavated.

- If, as was stated during the presentation, the ground water quality has not significantly improved since the initial removal action, what expectation is there that additional soil contaminant excavation would eliminate the contaminant source?

The level of contamination noted in samples collected from on-site wells has remained fairly consistent from 1996 to 2004; however, these levels are all substantially lower than levels detected prior to and during the removal action (1991-92). These results, coupled with the fate and transport characteristics of the soil contaminants, indicate that source removal is necessary to effectively address ground water contamination. Selection of cleanup levels for subsurface soil on the basis of protection for the leaching to ground water pathway is expected to significantly reduce the ground water cleanup time frame, and is consistent with Florida Statute §376.30701.

8. More than 20% of the contaminated soil proposed for excavation is on-site, sub-surface soil to be removed to protect ground water. Given substantial existing ground water contamination from the Escambia and Agrico sites, the Board recommends that the Region evaluate whether or not removal of these subsurface soils will make a significant change in contaminant mass and plume volume down gradient from the site.

As noted in the response to Board comment 7, ground water contaminant concentrations have been responsive to the removal of subsurface soil contamination. The positive ground water response to the removal action was both significant and relatively rapid. Since this response is subject to diminishing returns as the concentration of subsurface soil contamination removed is lowered, determination of appropriate subsurface soil cleanup levels for protection of groundwater was performed using the Summers model (see *Determining Soil Response Action Levels Based on Potential Contaminant Migration to Ground Water: A Compendium of Examples, EPA/540/2-89/057*). ***While conservative, the modeled approach is based on site-specific data, and does result in cleanup levels that are demonstrably protective of ground water.***

The Remedial Investigation/ Feasibility Study for Ground Water (OU-2) is sequenced behind the soil action, and remedial action objectives for this medium therefore have not been established. The remedial action objectives for ground water will provide for restoration of this resource to beneficial use within a reasonable time frame. Despite both the extent and down gradient commingling of the ground water plume, the ground water remedial alternatives will require the elimination of ongoing sources of ground water contamination. The subsurface soil cleanup levels for protection of ground water are consistent with this approach, and are complimentary to the future ground water remedial action.

9. As part of its presentation to the Board, the Region described the redevelopment plans for the site and how those plans affected the overall remedial approach including the

selection of cleanup goals. Based on the presented information, however, it was unclear whether all of the proposed actions would be necessary to implement a protective Superfund remedy. The Board recommends that the decision documents clearly identify those remedy components appropriate under CERCLA. Other actions or activities, which may be more associated with, or beneficial to the planned redevelopment of the site (e.g., capping and compaction to support structures) should be pursued outside of the Superfund process.

All of the alternatives described in the Feasibility Study (and draft Proposed Plan) include only those components considered necessary to implement a protective Superfund remedy. However, in order to provide a comparison between a "baseline" and an "enhanced" version (i.e., a version that includes components solely supportive of the planned redevelopment) of a remedial alternative, alternate costs estimates have been prepared for each alternative. The alternate estimates consider basic enhancements to the proposed remediation (e.g., additional compaction, additional soil buffer layer, asphalt layer, installation of pilings for building support). The Region recognizes that EPA cannot include enhancements in the Superfund remedy, but it may be beneficial for stakeholders to have an idea of the difference in cost for redevelopment components that may be desirable.

10. The Board package included "permanently and/or significantly reduce the mobility/toxicity/...with treatment." There is no treatment planned for the soils, therefore, the decision documents should not include this as an RAO.

The treatment RAO has been deleted from the Feasibility Study and draft Proposed Plan.

Thank you, and all the Board members, for your time and effort in performing this review. Please call me at (404) 562-8651 should you have any questions.

cc: M. Cook (OSRTI)
E. Southerland (OSRTI)
S. Bromm (OSRE)
J. Woolford (FFRRO)
C. Monell (SRTSB)

ATTACHMENT 1

Florida Department of Environmental Protection Letter Dated June 6, 2005
(from Gregory Munson to Winston Smith)

Department of Environmental Protection

Jeb Bush
Governor

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3900 Commonwealth Boulevard
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Colleen Castille
Secretary

June 6, 2005

Winston A. Smith, Director
Waste Management Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street S.W.
Atlanta, Georgia 30303-8960

Dear Mr. Smith:

The United States Environmental Protection Agency has asked the State of Florida Department of Environmental Protection to provide additional information concerning its interpretation and intended implementation of recent legislation, §376.30701, Florida Statutes. This statute, together with Sections 376.3071, 376.81 and 376.3078, F.S., create a "global" risk based corrective action process for cleaning up contaminated sites in the State of Florida. This letter is intended to serve as a response to that request, and to hopefully bring to a conclusion the continuing discussion about the identification and acceptance of an excess lifetime cancer risk of 1×10^{-6} for carcinogens or a hazard index of 1 or less for non-carcinogens as applicable or relevant and appropriate requirements (ARARs) for CERCLA sites in Florida.

During its 2003 session, the Florida legislature passed a "risk based corrective action" statute, Section 376.30701, Florida Statutes (F.S.), (global RBCA) that is designed to address environmental cleanups conducted at all contaminated sites in Florida not subject to the petroleum, Brownfields, and drycleaning solvent programs described in Sections 376.3071, 376.81 and 376.3078, F.S., respectively.[1] The State of Florida through the Florida Department of Environmental Protection (FDEP) interprets this statute, which became effective June 20, 2003, to require that all global RBCA cleanups achieve an excess lifetime cancer risk of 1×10^{-6} for carcinogens or a hazard index of 1 or less for non-carcinogens, unless one of the following statutory exceptions exist:

(1) if the Department has adopted a maximum contaminant limit (MCL) for surface or groundwater that is applicable to a contaminant at the site, that MCL is the cleanup target level and a responsible party may not be required to clean up this contaminant to a level more stringent than the MCL[2];

(2) if the naturally occurring background concentration of a substance is higher than the otherwise applicable cleanup target level for that contaminant at the site, a responsible party may not be required to clean up this contaminant to a level more stringent than the naturally occurring background concentration[3]; and

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[1] §376.30701(1)(b), F.S.
[2] §376.30701 (2)(g)1.,F.S.
[3] §376.30701 (2)(g)1.; §376.30701(2)(i)1., F.S.

(3) if the best achievable detection limit for a contaminant is higher than the otherwise applicable cleanup target level for that contaminant, a responsible party may not be required to clean up this contaminant to a level more stringent than the best achievable detection limit[4].

The risk-based corrective action requirements of Section 376.30701, F.S., apply to all cleanups conducted by any legally responsible party at these sites, to parties who are voluntarily cleaning up a site, if they are seeking FDEP approval for any aspect of the work, and to the FDEP when it is conducting any cleanup at these sites pursuant to its statutory authority[5]. Furthermore, these provisions may be enforced against all responsible parties conducting such cleanups in Florida[6].

The FDEP has also adopted rules implementing these statutory cleanup requirements. The rules, found in Chapters 62-780 and 62-777, Florida Administrative Code (F.A.C.), also mandate that, with the exceptions noted above, cleanup target levels must meet the statutory criteria of an excess lifetime cancer risk of 1×10^{-6} for carcinogens or a hazard index of 1 or less for non-carcinogens. The rules permit a responsible party to choose whether it will meet these requirements by cleaning up to default cleanup target levels found in Chapter 62-777, Tables I and II, F.A.C., or by deriving alternative cleanup target levels for a site based on site-specific conditions and projected uses. However, although a responsible party may propose to use site-specific information concerning exposure to contaminants, these rules require that the statutory excess lifetime cancer risk of 1×10^{-6} for carcinogens or a hazard index of 1 or less for non-carcinogens be met for the alternative cleanup target levels[7] or that engineering or institutional controls be used to control or eliminate exposure to achieve these risk-based statutory levels of protection.

The Florida legislature and the FDEP designed Section 376.30701, F.S., and Chapter 62-780, F.A.C., to provide site-specific flexibility on how to develop remedies that must meet the risk levels noted therein, but these provisions cannot be used to select less stringent site-specific cleanup levels, unless one of the exceptions noted herein apply. The FDEP believes that the requirements for cleanups to meet an excess lifetime cancer risk of 1×10^{-6} for carcinogens or a hazard index of 1 or less for non-carcinogens, and certain related provisions of the global RBCA rules are "applicable requirements[8]" that apply to all sites not covered by the petroleum, drycleaning solvent, or Brownfields statutes. Furthermore, these requirements

[4] §376.30701 (2)(g)1.; §376.30701(2)(i)1., F.S.
[5] §376.30701(1)(c), F.S.
[6] §376.30701(1), F.S., states that these clean-up requirements apply to the cleanup of all sites by legally responsible parties, including cleanups by FDEP. Rule 62-780.150, F.A.C., reiterates these requirements, but clarifies that global RBCA will not apply if the Department has accepted a different cleanup target level in writing prior to the effective date of the rule and the responsible party actually achieves that level, if FDEP has previously agreed that work on the site was completed, or if FDEP has entered into a consent order with the responsible party requiring cleanup of the site. A failure to comply with the statute is a violation. §376.302, F.S. If a violation occurs, FDEP may take appropriate enforcement action. 376.303(1)(j), F.S.; §403.121-.161, F.S.
[7] Rule 62-780.650(1)(d), F.A.C.
[8] 40 C.F.R. §300.5

constitute ARARs[9] for groundwater, surface water, and soil contamination that must be met or waived for cleanups at CERCLA sites in Florida subject to global RBCA.

Thank you for allowing FDEP an opportunity to provide you with additional information on this issue. We believe that we have addressed your concerns. If however, you have additional questions, please contact Jack Chisolm, Deputy General Counsel, at the above address, or by telephone at (850) 245-2275.

Sincerely,

Gregory M. Munson
General Counsel

[9] 40 C.F.R. §300.400(g)